EQUIPMENT MAINTENANCE ASSISTING METHOD AND

EQUIPMENT MAINTENANCE ASSISTING SERVER

BACKGROUND OF THE INVENTION

The present invention relates to a technique for assisting equipment maintenance and in particular, to a technique for providing service to assist a
5   customer and maintenance engineer to perform an appropriate maintenance as desired by the customer.

An enterprise has various equipment and operates it for various objects. For example, an electricity-related equipment may be a power station, a
10   substation, power receiving equipment. In order to smoothly operate equipment related to the enterprise, it is generally necessary to inspect and repair the equipment and replace parts periodically or when required.
15   Conventionally, for example, a customer who receives the maintenance service can have only a fixed service according to a fixed contract. For example, when an equipment has been operated for a predetermined time, a predetermined inspection is performed and
20   further, when the equipment has been operated for a predetermined time, a particular part is replaced with a new one. The customer pays a service fee for the various maintenance work, parts used for the maintenance, or according to the period of time of the
25   maintenance contract. In this method, even when the

parts are in a good condition not requiring replacement are also subjected to the maintenance service determined in advance.

SUMMARY OF THE INVENTION

5   In contrast to the aforementioned, recently, it has become possible to select a maintenance service according to the condition of the equipment. In this method, the equipment characteristic values are periodically collected directly or at remote control.

10 By using the collected values, condition of a particular part is checked directly or indirectly based on a deterioration model, and the maintenance engineer decides the contents of the maintenance service and propose it to the customer. The customer orders a

15 maintenance work according to the proposal. However, in this method also, the customer cannot select a service work. That is, the customer can select a service only within a service range offered by the company with whom a contract is made. Moreover, in

20 such a maintenance service according to the condition of the equipment, it is necessary to collect information periodically. However, the enterprise which can do that is limited to particular ones and there is only a small range for selecting a maintenance

25 enterprise.

      As a result, a customer accepts the limited maintenance service offered by the maintenance service

enterprise. In order to assure operation of the
equipment, the maintenance quality cannot be lowered.
Accordingly, the customer accepts the maintenance
service which is assumed to be sufficient.

5 Accordingly, there is a possibility that an excessive
maintenance service is performed. As a result, the
maintenance cost may be higher than is required.
However, it is difficult to determine whether the
maintenance service currently performed is appropriate

10 or not.

It is therefore an object of the present
invention to provide a technique to assist a customer
enterprise to easily check whether its equipment
requires maintenance work or not. Another object is to

15 provide a technique that assists equipment maintenance
service enterprises to propose service contents which
can be offered, and customer to order maintenance work
that can easily be performed. Still another object is
to provide information for the customer to determine

20 whether maintenance work is required or not and a
technique for the customer to determine objectively
which equipment maintenance service enterprise is
offering maintenance work most appropriate and to order
maintenance service at the most possible low cost.

25 In order to solve the first problem, the
first invention provides an equipment maintenance work
assisting method using a maintenance work assisting
server which can be connected to customer systems via a

network so as to assist the customer systems. For this, the server accepts and stores a maintenance service content which a customer has specified from the customer system and information indicating a range that

5 can be disclosed about a customer equipment. Moreover, the server fetches and analyzes equipment information about the customer equipment according to a maintenance service content which has been loaded from the customer system, and deciding whether a condition for performing

10 maintenance is satisfied; and when it is decided that the maintenance is required, the server creates a maintenance service assisting program that can be used for maintenance order and that includes information serving as a basis to determine that the maintenance is

15 required and information required for maintenance order, and transmitting the program to the customer via the network.

Moreover, in order to solve the second problem, the second invention provides an equipment

20 maintenance work assisting method using a maintenance work assisting server which can be connected to equipment maintenance service enterprise systems via a network so as to assist the equipment maintenance service enterprise systems. For this, the server

25 accepts and stores an available maintenance work menu from the respective equipment maintenance service enterprise systems. Moreover, when a maintenance order from a customer system to an equipment maintenance

service enterprise is accepted, the server creates a
maintenance enterprise assisting program that includes
information required for fetching the equipment
information of the customer which has made the
5   maintenance order and can be used for maintenance work
and transmitting the program to the equipment
maintenance service enterprise via the network.

Furthermore, in order to solve the third
problem, the third invention provides an equipment
10 maintenance work assisting method using a maintenance
work assisting server which can be connected to
customer systems and equipment maintenance service
enterprise systems via a network so as to assist the
customer system and equipment maintenance service
15 enterprise systems. For this, the server accepts and
stores a maintenance service content which a customer
has specified from the customer system and information
indicating a range that can be disclosed about a
customer equipment. The server accepts and stores an
20 available maintenance work menu from the respective
equipment maintenance service enterprises and fetches
and analyzes equipment information about the customer
equipment according to a maintenance service content
which has been loaded from the customer system, and
25 decides whether a condition for performing maintenance
is satisfied. When it is decided that the maintenance
is required, the server creates a maintenance service
assisting program that includes information necessary

for maintenance order including identification of an
equipment maintenance service enterprise and that can
be used for maintenance order and, and transmitting the
program to the customer system via the network. Upon

5 acceptance of a maintenance order from a customer
system to an equipment maintenance service enterprise,
the server creates a maintenance enterprise assisting
program that includes information necessary for
fetching the equipment information of the customer

10 which has made the order and that can be used for
maintenance work, and transmitting the program to the
equipment maintenance service enterprise system via the
network.

Additionally, the first and second invention

15 may further comprise steps of: accepting, in addition
to the maintenance service content to be received by
the customer, further equipment information of the
customer equipment that can be disclosed, and creating
and storing statistical data about the equipment

20 maintenance; and transmitting the statistical data to a
customer system which has made a request for the data.

Moreover, the second and third inventions may
further comprise steps of: accepting, in addition to
the maintenance service content to be received by the

25 customer, equipment information of the of the customer
equipment which can be disclosed as information and
creating statistical data concerning the equipment
maintenance; and upon reception of a request from an

equipment maintenance service enterprise, transmitting
the statistical data to the equipment maintenance
service enterprise system.

5 Other objects, features and advantages of the
invention will become apparent from the following
description of the embodiments of the invention taken
in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 shows an outline of a business
10 according to the present invention.

Fig. 2 shows a brief flow of the business
according to the time flow according the present
invention.

Fig. 3 is a block diagram constituting the
15 system function configuration used in the present
invention.

Fig. 4 shows a detailed flow of the business.

Fig. 5 shows a detailed flow of the business
according to a first embodiment.

20 Fig. 6 shows a detailed flow of the business
according to a second embodiment.

Fig. 7 shows a detailed flow of the business.

Fig. 8 explains a profile recording block of
a maintenance work assisting server and a data file
25 format in the recording block.

Fig. 9A to Fig. 9C show screen examples used
for input and output: Fig; 9A shows an example of a

customer profile loading screen; Fig. 9B shows an example of a maintenance enterprise profile loading screen; and Fig. 9C shows an example of maintenance order decision screen.

5   Fig. 10 shows an example of basis display screen.

Fig. 11 is a block diagram showing a system configuration of a customer system, an equipment maintenance information provider system and hardware system that can be used in an equipment maintenance service enterprise.

Fig. 12 explains a function configuration of a maintenance service assisting program.

Fig. 13 shows an example of a maintenance enterprise assisting screen.

Fig. 14 shows a function configuration of a maintenance enterprise assisting program.

DETAILED DESCRIPTION OF THE EMBODIMENTS

Description will now be directed to embodiments of the present invention with reference to the drawings.

Firstly, referring to Fig. 1 and Fig. 2, explanation will be given on an outline of the business to which the present invention is applied. Fig. 1 shows an outline of the business of the present invention, and Fig. 2 briefly shows a time-based flow of the business of the present invention.

In Fig. 1, an equipment maintenance service
enterprise 13 offers a maintenance service to a
customer 12 [sic]. And an equipment maintenance
information provider 12 as a subject of the service
5 providing information required for equipment
maintenance offers maintenance-related information to
the customer 11 and to the equipment maintenance
service enterprise 13. The equipment maintenance
information provider 12, the customer 11, and the
10 equipment maintenance service enterprise 13 are
connected to one another for offering and receiving
information. For this, each of the equipment
maintenance information provider 12, the customer 11,
and the equipment maintenance service enterprise 13 has
15 a computer as hardware resource which can be used for
information transmission/receiving and processing of
the transmission/reception information and software for
causing the computers to execute a target processing.
The computers are connected to one another by a network
20 such as Internet. Accordingly, each of the customer
11, the equipment maintenance information provider 12,
and the equipment maintenance service enterprise 13 is
an operation subject which is substantially a system
held by these subjects, that is a hardware system in
25 which software has been installed. Accordingly,
hereinafter, the customer 11 means a customer system,
the equipment maintenance information provider 12 means
an equipment maintenance provider system, and the

equipment maintenance service enterprise 13 means an
equipment maintenance service enterprise system, unless
otherwise specified.

5   As a hardware resource, for example, a system
having configuration as shown in Fig. 11 is used.   That
is, the system comprises: a computer 1010; an input
device 1020 including a keyboard 1021 and a mouse 1022;
a display device 1030; a communication control device
1040 for connection to the network; and an external
10 storage device 1050.   The computer 1010 includes a
central processing unit (CPU) 1011, a read only memory
(RON) 1012, and a random access memory (RAM) 1013.   The
external storage device 1050 can be used as a storage
device for a database and can contain a program
15 executed by the CPU 1011.   It should be noted that the
system of the customer 11 and the system of the
equipment maintenance service enterprise 13 can use a
similar computer system.

Next, ref erring to Fig. 2, explanation will
20 be given on the flow of the maintenance assisting
service in the business to which the present invention
is applied.

The customer 11, firstly, loads a maintenance
service content to be performed for its equipment and
25 equipment information which may be opened for the
maintenance in a form of a customer profile to the
equipment maintenance information provider 12.   On the
other hand, the equipment maintenance service

enterprise 13 loads a maintenance work menu which can be provided by itself in a form of a maintenance enterprise profile, to the system of the equipment maintenance information provider 12.

5   The equipment maintenance information provider 121 stores the content described in the customer profile (customer profile data) in a customer profile data file 810 (see Fig. 8) of the storage device such as a profile recording block 312 (see Fig.

10   23 and Fig. 8) provided, for example, in the external profile device 1050. Moreover, the equipment maintenance information provider 12 fetches information from the customer equipment according to the content described in the customer profile and stores the

15   information in an equipment data file 810 (see Fig. 8) of the storage device such as a profile recording block 312 (see Fig. 3 and Fig. 8) provided in the external storage device 1050. An analysis block 311 analyzes a condition described in the customer profile data and

20   the information fetched from the customer equipment. If the analysis result satisfies a condition requiring maintenance, a maintenance service assisting program is generated according to the result. The equipment maintenance information provider 12 transmits the

25   maintenance service assisting program via a communication block 314 to the customer 11.

By using the maintenance service assisting program, the customer can receive information about its

equipment, for example, in what condition its equipment is as compared to other equipment, and can receive an advice to which equipment maintenance service enterprise the maintenance is to be ordered. According
5   to such information and advice, the customer 11 indicates to order maintenance to a particular equipment maintenance service enterprise 13. Here, it is possible to reference statistical data showing the maintenance condition about a similar equipment. As a
10 result, it is possible to determine whether the equipment requires maintenance service or not.

According to the content of the customer profile registered (loaded) in advance, a reference fee is specified for the maintenance service assisting
15 program received by the customer 11. Accordingly, the equipment maintenance information provider receives the specified fee for using the program.

On the other hand, the equipment maintenance service enterprise 13 which has received order for
20 maintenance from the customer receives a maintenance enterprise assisting program from the equipment maintenance information provider 12. By using the maintenance enterprise assisting program, the equipment maintenance service enterprise 13 can fetch information
25 related to the equipment of the customer 11 from which an order is received. Moreover, according to equipment to be subjected to the maintenance work, it is possible to fetch information such as equipment stop/start

procedure required for the maintenance work.

In this maintenance enterprise assisting program, the equipment maintenance information provider 12 can add a certain limit to the information related to the equipment of the customer 11. By using information from the maintenance enterprise assisting program, the equipment maintenance service enterprise 13 provides maintenance/repair service to the equipment of the customer 11 and receives a service fee for that.

10   For the maintenance enterprise assisting program received by the equipment maintenance service enterprise 13, its reference fee is set according to the content of the maintenance enterprise profile registered (loaded) in advance. According to this setting, the equipment maintenance information provider receives a fee for using the program.

Next, referring to Fig. 3 and Fig. 8 to Fig. 14, explanation will be given on a specific system function configuration of the present invention.

20   Fig. 3 shows a function configuration of the entire system of the present invention. It should be noted that in this embodiment, for simplifying the explanation, only one customer 11 and only one equipment maintenance enterprise 13 are shown, although actually a plurality of customers 11 and a plurality of equipment maintenance enterprises 13 exist. As shown in Fig. 3, the equipment maintenance information provider 12 includes a maintenance work assisting

server 310. The customer 11 includes a customer
equipment 320 and an equipment maintenance client 330.
Moreover, the equipment maintenance service enterprise
13 includes a maintenance service assisting device 340.

5   Each of the maintenance work assisting server 310, the
customer equipment 320, the equipment maintenance
client 330, and the maintenance service assisting
device 340 includes a computer or a circuit executing
logic operation equivalent to a computer. The computer

10   can have configuration, for example, identical to the
hardware system shown in Fig. 11.

The maintenance work assisting server 310
has: an analysis block 311 for analyzing information; a
profile recording block 312; a data recording block

15   313; and a communication block 314 for communication
via a network which are realized by software in the
computer. These functions can be realized by an
equivalent device realizing the respective functions
such as an analysis device 311, a profile recording

20   device 312, a data recording device 313, and a
communication device 314, by replacing all or part of
the corresponding functions. In this case, the server
310 controls operation of these devices.

The analysis block 311 has a data analysis

25   function block 3111 for analyzing data, and a program
generation function block 3112 for generating a
maintenance service assisting program (see Fig. 12) and
a maintenance enterprise assisting program (see Fig.

14) according to the analysis result. These are realized by executing a program for generating a program. The program generation function block 3112 has an unfinished version of the maintenance service

5 support program generated in advance for typical items excluding conditions inherent to the equipment of the customer and an unfinished version of the maintenance enterprise assisting program generated in advance for typical items excluding conditions inherent to the

10 equipment maintenance service enterprise.

The data analysis function block 3111 analyzes the equipment condition of the customer according to the customer equipment information. This analysis is, for example, to compare the customer

15 equipment information with a predetermined reference and determine whether maintenance work is required. Here, it is possible that this decision is made, referencing the customer maintenance policy. For example, a strict reference is set and it is decided to

20 perform maintenance when a deviation from the reference is very small. It should be noted that as a reference for deciding whether to perform maintenance, it is possible to use information of other company together with the aforementioned reference or to replace the

25 aforementioned reference. For example, it is possible to use statistical data such as an average value and standard deviation of an equipment identical to at least one of the characteristic values, inspection

cycle, inspection content, inspection part of the customer equipment.

For this, the data analysis function block 3111 collects information which can be disclosed on an equipment of identical type in the specific field. The collection is performed according to a condition allowed by the customer. In general, this information is collected as the latest information when deciding whether to perform a maintenance work. Additionally, such information can be collected only as comparison data. For example, information collection can be performed periodically or from time to time if allowed by the customer. The information to be collected is information used for deciding whether to perform maintenance work such as the characteristics of the equipment, inspection cycle, inspection content, inspection part, and the like. The collected information is classified by a category of business, equipment type, form, and the like and they are accumulated in the equipment data recording block 313. Moreover, for the accumulated information, a statistic value such as an average value is obtained in advance. It should be noted that when it is desired to perform comparison excluding data on a target enterprise, statistic data is obtained according to information of the other enterprises of the same category and stored in the equipment data recording block 313. Alternatively, calculation is performed each time. The

statistical data may be, as has been described above,
an average value, dispersion, standard deviation, and
the like. The statistical data may be calculated in
advance or calculated at the moment when required. In
5 the example of Fig. 8, a statistical data file 850 is
provided.

The program generation function block 3112
describes the information obtained from the
aforementioned data analysis for the undefined portion
10 of the unfinished version of the maintenance service
assisting program prepared in advance, and completes
the maintenance service assisting program 1200. This
operation is automatically performed by the analysis
block 311. Thus, the maintenance service assisting
15 program 1200 is automatically generated.

Moreover, according to the information for
identifying the customer 11 contained in the
maintenance request report, a content of the
maintenance described in the corresponding maintenance
20 service assisting program, and the maintenance
enterprise profile data recorded in the profile
recording block 312, the program generation function
block 3112 generates an access allowance information
such as a password, so that the maintenance enterprise
25 can access data required when performing maintenance
work. Here, the data to be accessed may be, for
example, an equipment data file 820, an equipment
design information file 830, and a statistic data file

850.   The analysis block 311 fill in the unfinished
version of the maintenance enterprise assisting program
with the information for identifying the customer 11,
information specifying an equipment to be subjected to

5   maintenance work, and the access allowance information,
so as to complete the maintenance enterprise assisting
program 1300.   This operation is automatically
performed by the analysis block.   Accordingly, the
maintenance enterprise assisting program 1300 is

10   automatically generated.

As shown in Fig. 12, the maintenance service
assisting program 1200, for example, causes the
computer to execute: reason present function 1210 for
presenting a reason why it is decided to perform

15   maintenance work; a service enterprise present function
1220 for displaying a service enterprise appropriate to
provide the maintenance service; a basis present
function 1230 for showing a basis when a basis display
request is accepted; a profile modification input

20   reception function 1240 for accepting a modification
input when request for modification of the customer
profile is accepted; and an order indication acceptance
function 1250 for accepting an order indication.   This
maintenance service assisting program 1200 is executed

25   in the system of the customer 11, i.e., in the
equipment maintenance client 330, for example, to
display a screen shown in Fig. 9C so as to assist the
customer 11 to order a maintenance work.   This

maintenance assisting program may have configuration
appropriate for being executed in the system of the
customer 11 or executed via a browser.

As shown in Fig. 14, for example, the
5 maintenance enterprise assisting program 1300, causes
the computer to execute: a reason present function 1310
for presenting a reason why it has been decided to
perform maintenance work; object customer/equipment
display function 1320 for displaying the customer and
10 the equipment to which the maintenance service is to be
provided; a basis present function 1330 for showing a
basis when a basis display request is accepted; a data
display function 1340 for fetching and displaying
fetching and displaying data related to the equipment
15 of the customer requiring maintenance work from a
customer record/delivery block 322 or via the
maintenance work assisting server 310 of the equipment
maintenance information provider; a stop/start
procedure display function 1350 for fetching and
20 displaying information indicating a stop procedure and
a start procedure of the equipment to be subjected to
the maintenance work; and an access allowance
processing function 1360 for processing an access
allowance to the customer data. This maintenance
25 enterprise assisting program 1300 is executed in the
system of the equipment maintenance service enterprise
13, i.e., executed in the maintenance service assisting
device 340 and displays, for example, a screen shown in

Fig. 13 and assists the equipment maintenance service enterprise 13 in performing the maintenance work. This maintenance enterprise assisting program 1300, like the maintenance assisting program, may be executed in the system of the equipment maintenance service enterprise 13 or may be executed via a browser according to the purpose.

As for the maintenance service assisting program and the maintenance enterprise assisting program, the program generation function block 3112 may cause the maintenance service assisting program and the maintenance enterprise assisting program to indicate and advise at least one of the following information: the time of replacing the equipment of the customer; an advice for a new type to replace the old one; a maintenance enterprise; and a maintenance menu that can be provided by the maintenance enterprise.

Moreover, the program generation function block 3112 can add to the maintenance service assisting program and the maintenance enterprise assisting program a function for generating and presenting a screen for comparison with condition of a similar equipment of the other enterprise. For example, it is possible to add a function to display at least one of the customer equipment characteristic values, inspection cycle, inspection content, and inspection part so as to be compared with average values and standard deviation data of a similar equipment. In

this embodiment, presentation is performed by making it possible to reference in the maintenance service assisting program and the maintenance enterprise assisting program. Fig. 10 is an example of such

5   presentation. It is also possible to reference the comparison result separately from the aforementioned programs.

It should be noted that the maintenance work assisting server 310 can further provide a transmission

10 decision block for deciding a transmission destination, transmission timing, and transmission frequency of the maintenance service assisting program or the maintenance enterprise assisting program. For example, the transmission destination can be decided by

15 referencing at least one of the customer profile data file 810, the maintenance enterprise profile data file 840, equipment data file 820 including repair information, and the equipment design information file 830 including part lot information.

20 The customer equipment 320 includes a main body function block 321 and a record/delivery block 322. The record/delivery block 322 collects and records necessary information from the main body function block 321 of the customer equipment according

25 to a predetermined method and a predetermined cycle or a method and cycle indicated by the maintenance work assisting server 310. The main body function block 321 is a part that the equipment operates for that purpose.

In formation from the main body function block 321
includes signals from various sensors provided in the
main body function block 321 and various instructions
given to the main body function block 321. The signals
5 from the sensors may be, for example, detection signal
of a sensor indicating penetration of insulating oil.
Moreover, as information related to the various
instructions, for example, there is a counter value
indicating the switch on/off instruction count. The
10 record/delivery block 322 may restrict output of a part
of the collected information. Moreover, the
record/delivery block 322 may output, instead of raw
data, a quantity processed into a function to grasp the
operation condition of the equipment.

15   Moreover, the equipment maintenance client
330 has a display/input block 331 and a communication
block 332 for processing information display and
instruction input as functions to be realized by
software in the computer. The maintenance service
20 assisting device 340 has a display/input block 341 and
a communication block 342 for processing information
display and instruction input as functions realized by
software in the computer. It should be noted that the
functions of display/input block 331 and 341 in the
25 equipment maintenance client 330 and the maintenance
service assisting device 340 may be realized by a
browser prepared in advance in the display/input block
331, 341 by using, for example, a program and format

transmitted from the maintenance work assisting server 310.

In the profile recording block 312 of the maintenance work assisting server 310, the customer profile data file 810 and the maintenance enterprise profile data file 840 are recorded. Moreover, in the equipment data record block 313, the equipment data file 820 and the equipment design information file 830 are recorded. Fig. 8 schematically shows configuration of these data.

The customer profile data file 810 controls information of a maintenance policy 813 for each of the customers ID811 and each of the object equipment ID812. The maintenance policy 813 controls information as follows: a request service 8131 which identifies the degree of the maintenance, equipment disclosure level 8132 indicating to which extent the equipment contents can be disclosed, and information providing frequency 8133 indicating how often the information is provided.

The maintenance enterprise profile data file controls information of a product ID842 and a corresponding service content 843 for each of the enterprises ID9411 identifying a maintenance enterprise.

The equipment data file 820 controls for each of the equipment ID821, history data 822 containing measurement values of the equipment together with time and monitor log data 823 containing a slight failure

found by the self-monitoring function together with the
time.

The equipment design information file 830
controls for each of the products ID831, information of
5 the equipment ID832, components 834, and parts
characteristics 834.

Here, the product ID831 and 842 are uniquely
assigned to each of the equipment types such as a
turbine type A, an incoming panel type B, a breaker
10 type type C expressed, for example, by a combination of
letters and numeric such as "TB-A". The equipment
ID811, 821, 832 are uniquely assigned identification
for specific equipment such as a turbine No. 1, an
incoming panel type B No. 2, a breaker type C No. 3,
15 expressed, for example, by a combination of letters and
numeric such as "TB-A-0001".

The components 833 indicates parts
constituting the product such as a blade and a contact,
expressed in letters, numeric, or combination thereof
20 such as "CONT-A". The parts characteristics 834
indicates information for each of the type of the
components: a failure history, replacement frequency
under a predetermined operation condition, repair
frequency, and the like.

25   Next, referring to Fig. 9A, Fig. 9B, Fig. 9C,
and Fig. 13, explanation will be given on a customer
profile loading screen, a maintenance enterprise
profile screen, a maintenance order decision screen,

and a maintenance enterprise assisting screen. These
are displayed in the system of the customer 11 and the
system of the equipment maintenance service enterprise
13. More specifically, in the display/input block 331

5 and the display/input block 332 shown in Fig. 3, the
screen is displayed and input for that is accepted.

Fig. 9A shows a customer loading screen
displayed by the display/input block 331. In Fig. 9A,
the customer loading screen 910 includes: a customer ID

10 loading field 911; an object equipment setting field
912; a request service setting field 913; a self-
equipment disclosure level setting field 914; an
information provide frequency setting field 915; a
confirmation button 916; and a cancel button 917. In

15 each of the fields, an operator can input corresponding
items. The display/input block 331 accepts inputs from
the customer 11.

In the customer ID loading field 911, a
customer ID identifying the customer is entered. This

20 is for identifying a customer among a plurality of
customers. For example, the customer ID is composed of
letters and numeric or combination thereof such as
"KI0001". In the object equipment setting field 912,
an ID of the customer equipment to be subjected to

25 maintenance work is entered. This ID is uniquely
assigned to each of the specific equipment such as a
turbine type A No. 1, an incoming panel type B No. 2,
and a breaker type C No.3 expressed by a combination of

letters and numeric such as "TB-A-0001".

In the request service setting field 913, a
maintenance service content desired for the equipment
is entered. Here, a menu of predetermined items may be
5 displayed. Moreover, it is also possible to display a
menu of decision result of the maintenance enterprise
profile (which will be detailed later) loaded in the
maintenance work assisting server which is reflected in
the profile format. In this case, the customer can
10 select a desired service from this menu. The menu
content may be, for example "maintenance of the turbine
blade" and "performance maintenance of the entire
incoming panel".

In the self-equipment disclosure level
15 setting field 914, the operator inputs an information
disclosure level of the equipment which may be
disclosed about the equipment when receiving service.
For example, level 1 discloses direct values as they
are, level 2 discloses an average value of a certain
20 period of time, level 3 discloses a maximum value.
Thus, the information is divided in different ranks and
one of the ranks is set. Moreover, it is possible to
rank the information as follows. That is, level 1
contains information for identifying an equipment and
25 level 2 does not contain this information. Moreover,
information is disclosed completely when using the
information for analysis of the self-enterprise, and
the disclosure is limited when the information is used

for analysis for the other enterprises. Thus, the
disclosure level can be defined from various viewpoints
and accordingly, these viewpoints can be set in the
form of AND/OR condition.

5   In the information provide frequency 915, the
operator sets a condition to receive the maintenance
service assisting program. For example, it is possible
to set "every X time", "when an accident is predicted",
"when an accident has happened", "when deterioration
10 has become P% as compared to an equipment of identical
type", and the like. At the specified timing, the
maintenance service assisting program is transmitted to
the customer.

           The confirmation button 916 is pressed after
15 the aforementioned inputs are performed, so as to
accept that the customer 11 has confirmed. When this
button is pressed, the information items which have
been set are transmitted via the communication block
332 to the communication block 314 of the maintenance
20 work assisting server 310 and are recorded in the
profile recording block 312. When a cancel button 917
is pressed, the data entered are canceled and not
transmitted.

           Fig. 9 shows the display/input block 341
25 displaying the maintenance enterprise profile loading
screen 920 displayed by the display/input block 341.
On the maintenance enterprise profile loading screen
920, there are arranged an enterprise ID loading field

921, an object product setting field 922, a service content setting field 923, a confirmation button 924, and a cancel button 925. The display/input block 341 displays these fields according to the format

5 transmitted from the maintenance work assisting server 310 and accepts inputs by the equipment maintenance service enterprise 13.

In the enterprise ID loading field 921, an enterprise ID identifying it is entered. This is for

10 identifying a particular enterprise among a plurality of enterprises. The enterprise ID is expressed by letters, numeric, or combination thereof such as "GID0001".

In the object product setting field 922, the

15 operator specifies a type of the equipment to be subjected to a maintenance work. This ID is uniquely assigned to each of the types of the equipment such as a turbine type A, an incoming panel type B, a breaker type C. For example, the ID is composed of letters,

20 numeric, or combination thereof such as "TB-A".

In the service content setting field 923, contents of maintenance service that can be offered are specified such as "service for cleaning part A of the turbine type A" and "service for replacing part Y of

25 the incoming panel type B". Thus, the service is expressed by the equipment type, its component, and maintenance work for it.

The confirmation button 924 is for accepting

the input contents confirmed. When this is specified
by the mouse 1022, the information items which have
been set are transmitted via the communication block
324 to the communication block 314 of the maintenance
5   work assisting server 310 and recorded in the profile
recording block 312. When the cancel button 925 is
specified, the data entered is cancelled and is not
transmitted.

      The display/input block displays a
10 maintenance order decision screen 930 for assisting
decision by using the maintenance service assisting
program. In the maintenance order decision screen 930
shown in Fig. 9C, there are arranged: decision reason
setting field 931, a service enterprise display field
15 932, a basis display button 933, a profile modification
button 934, an OK button 935, and a cancel button 936.
The display/input block 331 accepts inputs specified in
the respective fields.

      The decision reason setting field 931 shows a
20 condition on which the maintenance work assisting
server 310 has decided that maintenance is required.
For example, "deterioration is P% as compared to the
equipment of an identical type" and the like. The
service enterprise display field 932 displays an
25 enterprise ID of a selected appropriate equipment
maintenance service enterprise 13. The basis display
button 933 is pressed when the customer wants to know
the basis of the displayed condition. The profile

modification button 934 is used to display the customer
profile loading screen 910 and accept request for
modifying the contents which have been set.

The OK button 935 accepts the order when the
5 customer has agreed to order the maintenance. When the
OK button is pressed, by using e-mail or the like, the
maintenance is ordered to the equipment maintenance
service enterprise 13. When the cancel button is
pressed, no order is made.

10 Fig. 10 shows an example of the basis screen
1100 displayed when the aforementioned basis button 933
is pressed. In Fig. 10, 1110 denotes a result display
field, 1120 is a selection tub, and 1130 is a return
button. The example shown in Fig. 10 has a result
15 display field 1110 showing a deterioration index of the
self-equipment as compared to an average of equipment
of an identical type of the other customers. There are
various deterioration indexes depending on the
equipment. For example, in a power station equipment,
20 the switch on/off count, contamination (penetration) of
the insulating oil, or the like can be used as a
deterioration index. Here, data of such indexes are
collected and calculated to obtain an entire average to
serve as a reference. This average is displayed
25 together with the index of the customer to be compared,
so that the necessity degree of the maintenance work
can be decided. Thus, the conventional difficulty to
evaluate the necessity of maintenance can easily be

solved by using this graph. For example, when
receiving the maintenance service order assistance, the
customer can understand that there is a rational reason
for performing maintenance according to the graph
5 displayed.

Here, the data indicating conditions of the
other enterprises are important in making a decision.
That is, when data of the other enterprises have been
collected sufficiently, the reference for comparison
10 can have a high accuracy. Accordingly, it is a key
point for this business that the other enterprises
disclose their data as much as possible. For this, as
will be detailed later, the customer which has
disclosed data can have compensation. The compensation
15 may depend on the data type and quantity. That is, it
is necessary to pay a higher fee for those which can be
utilized as statistical data. Moreover, the
compensation is not limited to money. For example, the
compensation may be a whole or part of service fee.
20 Moreover, it is also possible to discount the service
fee.

The selection tub 1120 includes a
deterioration display 1121, an inspection display 1122,
an efficiency display 1123, a part display 1124, a
25 noise display 1125, and other display 1126. In the
state of Fig. 10, the deterioration display 1121 is
selected. By using the selection tub 1120, the
customer can obtain information about the other

conditions not set in the customer profile. For example, when the tub of the part display 1124 is selected, it is possible to utilize information of parts characteristics recorded in the equipment design

5 information file 830 and obtain information to predict the timing of failure of the part of the self-equipment from the failure history of the part of the other equipment. It is also possible for the customer to modify the customer profile data file 810 after

10 observing the basis display screen 1100. Thus, it is possible to perform more appropriate maintenance.

It should be noted that the basis display screen 1100 may be created at the stage when the maintenance service assisting program is created.

15 Moreover, it is also possible, during operation at the equipment maintenance client 330, to dynamically communicate with the maintenance work assisting server 310 and the customer equipment 320, so as to collect equipment information and create display. Either case

20 is limited to the self-equipment disclosure level of the customer profile data file 810 recorded in the profile recording block 312. That is, information not to be disclosed for the other customer is not involved at the stage when the maintenance service assisting

25 program is created. Moreover, when collecting equipment information by communication with the maintenance work assisting server 310 and the customer equipment 320, information not to be disclosed cannot

be accessed.

Next, referring to Fig. 13, explanation will
be given on the maintenance enterprise assisting screen
referenced when the equipment maintenance service
5 enterprise has received a maintenance order.

By using the maintenance enterprise assisting
program 1300, the display/input block 341 displays a
maintenance order decision screen 940 for assisting in
deciding whether to order maintenance. The maintenance
10 enterprise assisting screen 940 shown in Fig. 13
includes a decision reason setting field 941, a
customer display field 942a, a maintenance object
equipment display field 942b, a maintenance object
basis display button 943, a maintenance history display
15 button 947, a stop/start procedure display button 948,
an OK button, and a cancel button 946. The
display/input block 341 accepts input specified by the
customer 11 in each of the fields.

The decision reason setting field 941
20 displays a condition which is satisfied by the
maintenance work assisting server 310. For example,
"deterioration P% as compared to an equipment of the
identical type". The customer display field 942a
displays a customer ID for identifying an object
25 customer and a customer name. Moreover, the
maintenance object equipment 942b displays an equipment
to be subjected to maintenance service. The basis
display button 943 is pressed when the customer 11

wants to know the basis of the condition displayed.
The maintenance history display button 944 is a button
to accept a request for displaying the maintenance
history information showing what kind of maintenance
5   has been performed for the equipment of the customer.
The stop/start procedure display button 948 is a button
to accept request for displaying the stop procedure and
start procedure of the equipment to be subjected to
maintenance work. By providing this button, the
10 maintenance enterprise can stop and start the equipment
in safety.

  The OK button 945 is used to accept a
maintenance order. When the OK button is pressed,
maintenance is ordered to the customer 11 by e-mail or
15 the like. When the cancel button 946 is pressed, no
order is made.

  Next, explanation will be given on a business
procedure according to the embodiment using the system
having the aforementioned configuration with reference
20 to the aforementioned figures and Fig. 4, Fig. 5, and
Fig. 7. Fig. 4, Fig. 5, and Fig. 7 show a specific
example of the business procedure according to the
present embodiment. The symbols A, B, C, and the like
in the procedure flow show connections of the flow, and
25 like symbols are connected to like symbols.

  Firstly, the maintenance work assisting
server 310 of the equipment maintenance information
provider 12 transmits a format of the customer profile

to the equipment maintenance client 330 of the customer 11 (S101).

     The equipment maintenance client 330 uses the aforementioned format to display the customer profile
5 loading screen 910 as shown in Fig. 9A via the display/input block 331 (S201). According to the display on this screen, the display input block 331 receives the inputs by the customer 11. That is, the customer ID loading field 911 accepts the customer ID.
10 The object equipment setting field 912 accepts an ID of the customer equipment to be subjected to the maintenance work. The request service setting filed 913 accepts an input about the maintenance service content to be performed for the equipment entered. In
15 the self-equipment disclosure level setting field 914, an operator enters a disclosure level of the information about the equipment that can be disclosed when accepting service. The disclosure level has ranks as has been described above. Next, in the information
20 provide frequency 915, the operator sets a condition to receive the maintenance service assisting program. Lastly, the service confirmation button 916 is pressed for confirmation. Then, the information entered is transmitted via the communication block 332 to the
25 communication block 314 of the maintenance work assisting server 310 and recorded in the profile recording block 312 (S102). When the cancel button 917 is specified, the data entered is canceled and not

transmitted.

Next, the maintenance work assisting server
310 belonging to the equipment maintenance information
provider 12 transmits a maintenance enterprise profile
5 format to the maintenance service assisting device 340
belonging to the equipment maintenance service
enterprise 13 (S103).

By using the format received, the maintenance
service assisting device 340 displays a maintenance
10 enterprise profile loading screen as shown in 920 of
Fig. 9B in the display/input block 341 (S301). The
equipment maintenance service enterprise 13 enters its
ID in the enterprise ID loading field 921. In the
object product setting field 922, a type of the
15 equipment to be subjected to its maintenance is set.
In the service content setting field 923, the
enterprise 13 enters a maintenance service content that
can be performed by the enterprise 13. Lastly, when
the confirmation button 924 is specified, the
20 information which has been set is transmitted via the
communication block 324 to the communication block 314
of the maintenance work assisting server 310 and
recorded in the profile recording block 312 (S104).
When the cancel button 925 is specified, the data which
25 has been entered is cancelled and not transmitted. The
data format recorded becomes the aforementioned
maintenance enterprise profile data file 840 shown in
Fig. 8.

Among these steps, S101, S102, S103, and S104 may occur in an indefinite order and each of them may occur a plurality of times.

The record/delivery block 322 of the customer equipment collects and records necessary information according to a predetermined method and cycle or a method and cycle specified by the maintenance work assisting server 310 (S202).

The maintenance work assisting server 310 periodically accesses the record/delivery block 322 via the communication block 314 and fetches equipment information (S105). Alternatively, when a predetermined condition is satisfied, the record/delivery block 322 spontaneously transmits equipment information to the communication block 314, so that the communication block 314 can receive the information. The equipment information transmitted may be limited according to a content of the self-equipment disclosure level. In either case, the equipment information received by the communication block 314 is recorded in the equipment data recording block 313 (S106). The data format used here is the equipment data file 820 shown in Fig. 8.

The maintenance work assisting server 310 constantly decides in the analysis block 311 whether a predetermined condition is satisfied (S107). When the condition is not satisfied, control is passed back to the equipment information collection (S105). This

condition may be decided by the information provide
frequency in the customer profile data file 810 loaded
in the customer profile record procedure (S102). For
example, when "every X time" has been set, the time
5   lapse is observed and it is decided that the condition
is satisfied every X time. If "when an accident is
predicted" has been set, then contents of the equipment
data file 820 recorded in the equipment data recording
block 313 are analyzed and if an accident is predicted
10 with a predetermined probability or above, it is
decided that the condition is satisfied. If "upon
occurrence of an accident" has been set, then it is
decided that the condition is satisfied when the
equipment data transmitted from the record/delivery
15 block 322 contains information about an accident. If
"P% deterioration as compared to an equipment of
identical type" has been set, then contents of the
equipment data file 820 recorded in the equipment data
recording block 313 are checked. That is, according to
20 the information of the equipment design information
file 830, a product ID to which the equipment ID of the
customer is retrieved and equipment information items
of all the equipment ID belonging to the product ID are
analyzed to obtain an average deterioration index. If
25 the equipment of the customer is deteriorated by P% as
compared to the average deterioration index, it is
decided that the condition is satisfied.

According to this condition, the maintenance

work assisting server 310 automatically creates a
maintenance service using the analysis block 311
(S108). When a maintenance service assisting program
is created, it means that some maintenance work is
5 required except for the periodical condition. The
analysis block 311 selects an equipment maintenance
service enterprise 13 which is most appropriate for
this maintenance work according to the product ID and
service content of the maintenance enterprise profile
10 data file 840 registered (loaded) in the profile
recording block 312. When a plurality of equipment
maintenance service enterprises satisfy the condition,
one of them is selected according to a certain
condition such as stock condition or by an electronic
15 stock system, and this is loaded in the maintenance
service assisting program. Moreover, information such
as an cipher key required for accessing information
required for maintenance is also loaded in the
maintenance service assisting program and the program
20 created is transmitted via the communication block 314
to the communication block 332 of the equipment
maintenance client 330.

The system of the customer 11 uses the
maintenance service assisting program received in
25 assisting decision of maintenance order by the customer
11 (S203). In Fig. 9C, 930 represents this maintenance
order decision screen. The decision reason setting
field 931 shows the condition according to which the

maintenance work assisting server 310 has decided that
the condition is satisfied in step S107. For example,
"deterioration is P% as compared to an equipment of
identical type". The service enterprise display field
5 932 displays the enterprise ID of the equipment
maintenance service enterprise 13 selected as the most
appropriate enterprise in step S108.

When the customer 11 wants to know the basis
of the condition displayed, he/she specifies the basis
10 display button 933. When this button is specified, the
display/input block 331 causes the display device 1030
to display the basis display screen 1100 shown in Fig.
10. By using the selection tub 120, the customer can
obtain conditions other than those set in the customer
15 profile. For example, when the tub of part display
1124 is selected, by using the information on the part
characteristic recorded in the equipment design
information file 830, it is possible to obtain
information to predict a timing of failure of the self-
20 equipment according to the failure history of the parts
belonging to the other equipment.

After observing such basis display screen
1100, if the customer wants to modify the customer
profile data file 810, the customer specifies the
25 profile modification button 934 to display the customer
profile loading screen 910 and can correct the set
contents. Moreover, after observing such basis display
screen, if the customer agrees to make a maintenance

order, he/she specifies the OK button 935. The
equipment maintenance client 330 receives indication of
the OK button 935 by the display/input block 331
(S204). The communication block 332 transmits a

5   maintenance request to order maintenance to the
equipment maintenance service enterprise 13 by using e-
mail or other predetermined communication means. It
should be noted that when the cancel button 936 is
specified no order is made

10   Together with transmission of the
maintenance request to the equipment maintenance
enterprise, its copy is transmitted as a maintenance
request report to the maintenance work assisting server
310 of the equipment maintenance information provider

15   12. Upon reception of this, the maintenance work
assisting server 310 creates a maintenance enterprise
assisting program necessary for maintenance ordered
(S109). According to the maintenance enterprise
profile data file 840 registered (loaded) in the

20   profile recording block 312, information such as a
cipher key for accessing necessary data information is
set in the maintenance enterprise assisting program,
which is transmitted via the communication block 314 to
the communication block 342 of the maintenance service

25   assisting device 340.

The equipment maintenance enterprise 13 can
look at the contents of the maintenance enterprise
assisting program in the display/input block 341

(S302). Information displayed includes the basis display screen such that observed by the customer and additionally stop/start procedure for stopping/starting the customer equipment 320, a maintenance history of
5 the object equipment, and the like. It should be noted that the order reception confirmation can be transmitted to the customer.

These information items may be created in advance at the stage when the maintenance enterprise
10 assisting program (S109) is created, or it is also possible that by dynamically communicating with the maintenance work assisting server 310 and the customer equipment 320 during operation of the maintenance service assisting device and collecting equipment
15 information to create the display. In either case, the information is limited to the self-equipment disclosure level of the customer profile data file 810 recorded in the profile recording block 312. That is, information not to be disclosed to the other customers is not
20 involved at the stage when the maintenance enterprise assisting program (S109) is created and cannot be accessed when equipment information is collected by communicating the customer equipment 320.

The equipment maintenance service enterprise
25 13 performs maintenance work of the equipment 320 by referencing the display of the maintenance enterprise assisting program (S303).

As a result, the maintenance service

assisting program and the maintenance enterprise
assisting program are used for a predetermined period
of time and according to the time and the customer
profile data which has been set in advance or the
5   contents of the maintenance enterprise profile data,
the user of the program is charged. For this, each of
the maintenance service assisting program and the
maintenance enterprise assisting program has a function
to count the time the program is used and the function
10 to count the data quantity displayed. By these
function, the program utilization time and data
utilization quantity are checked and the fee is
calculated according to unit prices. The fee is
presented to the customer and transmitted to the
15 maintenance work assisting server 310. It should be
noted that when transmitting the maintenance service
assisting program and the maintenance enterprise
assisting program, an initial fee may be determined so
that a charging process may be performed in advance.
20 In this case, the charging process is executed by the
maintenance work assisting server 310.

On the other hand, by disclosing more
information about the self-equipment, it is possible to
improve the level of the maintenance service received.
25 Moreover, by disclosing the self-equipment to the other
customers, the other customers can receive benefits.
For this, the program use charge may be reduced. For
example, according to the data quantity provided, a

discount percentage or discount price may be decided to reduce the aforementioned fee.

Next, referring to Fig. 3, Fig. 4, Fig. 6, and Fig. 7, explanation will be given on a system
5   according to another embodiment of the present invention. In this system, the maintenance service assisting program is transmitted on request from a customer. Explanation will be given on this case. Fig. 3 shows a configuration of the system of the
10   invention and Fig. 4, Fig. 6, and Fig. 7 show a specific example of the business procedure according to the second embodiment. Symbols A, B, C and the like in the flowchart show continuance of the flows. Like symbols are connected to each other.

15   Firstly, the equipment design information file 830 is recorded in advance in the equipment data recording block 313 of the maintenance work assisting server 310. As has been described above, the information on the equipment ID, components, parts
20   characteristics are managed for each of the product ID.

Firstly, the maintenance work assisting server 310 belonging to the equipment maintenance information provider 12 transmits a customer profile format to the equipment maintenance client 330 of the
25   customer 11 (S101). The equipment maintenance client 330, by using the format, displays a customer profile loading screen as shown in 910 of Fig. 9A in the display/input block 331 (S201). In the customer ID

loading field 911, the customer ID input is accepted.

Next, the ID of the customer equipment to be subjected to a maintenance work is accepted in the object equipment setting field 912. Next, in the request service setting field 913, an operator enters a maintenance service content to be received for the equipment entered. Moreover, in the self-equipment disclosure level setting field 914, the operator enters a disclosure level of the equipment that can be disclosed to the others accompanying the service reception. Furthermore, the operator sets a condition to receive the maintenance service assisting program in the information provide frequency 915.

Lastly, the operator presses the service confirmation button 916 for confirmation and the information which has been set is transmitted via the communication block 332 to the communication block 314 of the maintenance work assisting server 310 and recorded in the profile recording block 312 (S102). When the cancel button 917 is pressed, the data which has been entered is cancelled and not transmitted.

Next, the maintenance work assisting server 310 belonging to the equipment maintenance information provider 12 transmits a format of the maintenance enterprise profile to the maintenance service assisting device 340 belonging to the equipment maintenance service enterprise 13 (S103). By using the format received, the maintenance service assisting device 340

displays a maintenance enterprise profile loading
screen as shown by 920 in Fig. 9 (S301). In this
state, an enterprise ID is accepted in the enterprise
ID loading field 921. Next, in the object product

5   setting field 922, a type of the equipment to be
subjected to a maintenance work is accepted. Next, in
the service content setting field 923, a maintenance
service content which can be provided is accepted.
Lastly, the confirmation button 924 is pressed for

10 confirmation and the information which has been set is
transmitted via the communication block 324 to the
communication block 314 of the maintenance work
assisting server 10 and recorded in the profile
recording block 312. In case the cancel button 925 is

15 pressed, the data entered is cancelled and not
transmitted.

Like in the first embodiment, the steps S101,
S102, S103, and S104 may occur in various orders and
each of them may occur a plurality of times.

20 The customer equipment 320 collects and
records necessary information by a predetermined
method/cycle or a method/cycle specified by the
maintenance work assisting server 310 (S205). The
maintenance work assisting server 310 periodically

25 accesses the record/delivery block 322 via the
communication block 314 and fetches equipment
information (S110). Alternatively, when a
predetermined condition is satisfied, the

record/delivery block 322 spontaneously transmits
equipment information to the communication block 314
and the communication block 314 receives the
information. The equipment information transmitted
5 here may be limited by a content of the self-equipment
disclosure level set in the customer profile data file
810. In either case, the equipment information
received by the communication block 314 is recorded in
the equipment data recording block 313 (S111).

10   When the customer 11 wants to know the
condition of the self-equipment, the equipment
maintenance client 330 receives indication from the
customer 11 and requests the maintenance work assisting
server 310 to transmit the maintenance service
15 assisting program (S206). The maintenance work
assisting server 310 automatically creates a
maintenance service assisting program according to the
request and transmits it via the communication block
314 to the communication block 332 of the equipment
20 maintenance client 330 (S112).

       The equipment maintenance client 330 assists
the customer 11 to decide whether to order maintenance
by using the maintenance service assisting program
received (S207). Here, as has been described above, a
25 screen as shown in Fig. 9C is displayed. The
processing performed here is identical to the
processing already explained and its explanation will
not be repeated here. By looking such a basis display

screen, if correction is required, a correction is
performed then the OK button is pressed if an operator
agrees to order maintenance (S208). Then, e-mail or
other communication means is used to order maintenance
5   to the equipment maintenance service enterprise 13.
When the cancel button 936 is pressed, no order is
performed. When the maintenance is ordered, a
necessary maintenance enterprise assisting program is
created in the maintenance work assisting server (S113)
10 as has been explained above.

A process after this is performed according
to the flow shown in Fig. 7. This is identical to the
aforementioned embodiment and its explanation is
omitted here.

15   Thus, the maintenance service assisting
program and the maintenance enterprise assisting
program are used for a certain time, and according to
the time used, and a content of predetermined customer
profile data or the maintenance enterprise profile
20 data, a program use fee is charged. For the customer,
by disclosing more of the information of the self-
equipment, it is possible to improve the level of the
maintenance service that can be received. Moreover, by
disclosing more information about the self-equipment to
25 the other customers, the other customers can have
benefits. For this, the program use fee may be
discounted.

According to the present invention, a

customer can have information for objectively deciding whether to receive a maintenance service by the maintenance service assisting program provided by an analysis supporting program server and can receive a

5 reasonable maintenance service at a lower cost. Moreover, on the other hand, the equipment maintenance information provider can provide maintenance assisting information without disclosing information and design information of the other customers more than necessary

10 and can receive a fee. Moreover, even if a maintenance enterprise cannot perform infra investment for the remote control maintenance, by loading its service profile in the analysis server provided by the equipment maintenance information provider, it can

15 receive maintenance order and information on the equipment associated with the maintenance service. Furthermore, according to a content of the customer profile, the content of the maintenance service assisting program can be modified, so as to modify the

20 maintenance service content that can be received by the customer.

Moreover, by providing information in a program form, the customer and the equipment maintenance information provider can limit the

25 information to be disclosed and prevent leak of secret information to the equipment maintenance service enterprise and other customers.

Moreover, as an entire market, it is possible

to increase the number of customers, maintenance
assisting information providers, and the maintenance
enterprises, thereby increasing the maintenance
information service market.

5   According to the present invention, a
customer can have information required for objectively
checking various maintenance services provided by a
plenty of maintenance enterprises. Moreover, the
present invention can assist the customer to receive a
10   reasonable maintenance service at a low cost.

It should be further understood by those
skilled in the art that the foregoing description has
been made on embodiments of the invention and that
various changes and modifications may be made in the
15   invention without departing from the spirit of the
invention and the scope of the appended claims.